

## Structure of this book

This book is the product of the doctoral dissertation of Niklas Höhne on the future development of the international climate change regime under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. This second revised edition includes the international developments during the year 2005 and some editorial revisions compared to the first edition.

The Kyoto Protocol requires developed countries to reduce their greenhouse gas emissions together by 5 % in the period 2008 to 2012 compared to 1990 levels. The official discussions on next commitments after 2012 are to start in 2005. The six stand-alone articles and the leading introduction provide an overview of the problem of climate change and then assess the options and make new proposals for a future international climate regime after 2012.

*Chapter 1* provides an overview of the problem of climate change and how the international community so far has dealt with the issue under the UNFCCC and the Kyoto Protocol.

*Chapter 2* considers an important determinant for future actions: the historical contributions of countries' past emissions to climate change. The idea to calculate relative responsibility for climate change was first proposed by the delegation of Brazil in 1997 and is since called the "Brazilian Proposal". The chapter presents results and sensitivities of such calculations.

*Chapter 3* shows how the emission reduction objectives of the Kyoto Protocol change the ability to stabilize the climate compared to the situation without implementation of the Protocol. Although the impact of the Kyoto Protocol on CO<sub>2</sub> concentrations and temperature increase in 2012 is insignificant, its implementation has considerable impact on the pathways that are available in the future to reach certain climate stabilization levels.

*Chapter 4* considers in detail how long-term climate goals translate into short-term emission levels. It takes a closer look at the climate system, the long-term effect of greenhouse gases and possible emission paths towards stabilizing the climate and the cascade of uncertainties in such a calculation. It summarizes the information needed to make judgements about dangerous levels and tracks back, which short-term emission levels would be necessary to avoid certain climate impacts, given the current knowledge and uncertainties.

*Chapter 5* makes a new proposal on the generic design of the future international climate regime, called "Common but differentiated convergence". It suggests that developed countries' per capita emissions converge within several decades to a low level. Individual developing countries' emissions converge to the same level also within the same timeframe, but starting, when their per capita emissions are a certain percentage above global average.

*Chapter 6* provides a comparison of emission allowances for countries under a variety of different approaches for an international climate regime after 2012. The results are significantly influenced by the long-term ambition level that is assumed. Therefore the calculations are made for several stabilization levels.

*Chapter 7* provides a systematic qualitative assessment of options for the evolution of commitments under the UNFCCC after 2012. It describes six scenarios of the development of the regime in the future and assesses them against evaluation criteria.

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